Analysis of Annual Mean Temperature Trends in Florida

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Abstract

This study investigates the correlation between consecutive years' annual mean temperatures in Florida. Utilizing a robust statistical approach, we aim to uncover patterns that could inform our understanding of regional climate trends.

1 Introduction

In the face of changing global climates, it is imperative to understand historical temperature trends at a regional level. This study focuses on Florida, analyzing annual mean temperatures to assess the persistence and implications of observed trends.

2 Methodology

2.1 Data Description

We analyze historical annual mean temperature data for Florida, focusing on understanding year-to-year variations.

2.2 Data Analysis Method

The analysis involves calculating the correlation between temperatures of consecutive years using Kendall's tau correlation coefficient. A permutation analysis with 10,000 iterations is also conducted to evaluate the significance of the correlation.

3 Results

3.1 Correlation Analysis

The analysis yielded a Kendall's tau correlation coefficient of **0.238**, indicating a mild positive correlation between temperatures of consecutive years.

3.2   Permutation Analysis

The permutation analysis resulted in a p-value of **3e-04**, suggesting that the observed correlation is statistically significant at the 5% level. The histogram of the permutation correlation coefficients is shown in Figure 1.
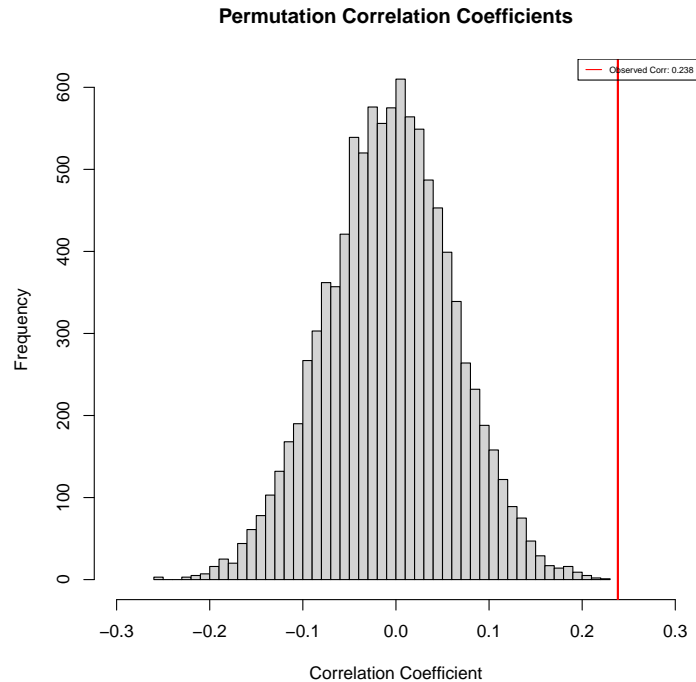
Permutation Correlation Coefficients

Figure 1: Histogram of Permutation Correlation Coefficients

4   Conclusion

The study reveals a statistically significant, albeit mild, positive correlation in annual mean temperatures across consecutive years in Florida. This finding underscores the importance of considering recent temperature trends in long-term climate modeling and policy making.